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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,404	03/16/2004	Ira M. Blevis	154/03364	3708
44909	7590	12/05/2005	EXAMINER	
WOLF, BLOCK, SCHORR & SOLIS-COHEN LLP 250 PARK AVENUE NEW YORK, NY 10177			ROSENBERGER, FREDERICK F	
			ART UNIT	PAPER NUMBER
			2884	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,404

Applicant(s)

BLEVIS ET AL.

Examiner

Frederick F. Rosenberger

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R2

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/3/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The present abstract is not the form of a claim as opposed to a narrative form.

Claim Objections

2. Claims 1 and 29 are objected to because of the following informalities:

In claim 1, line 3, "cameras" should be --camera--.

In claim 1, line 5, the positive recitation of "the connection" lacks proper antecedent basis.

In claim 29, line 4, the positive recitation of "the right angle" lacks proper antecedent basis.

Appropriate correction is required.

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3. Applicant's use of the phrase "adapted to" has been noted throughout the claims. Applicant is referred to MPEP 2111.04 regarding the use of "adapted to" in claim language. Specifically, such claim language may raise a question as to the limiting effect of the language in the claim. The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case. Previous rulings have held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform (see *In re Hutchison*, 69 USPQ 138). Alternative phrasing would alleviate this issue. In the interests of expediting prosecution, the claims have been evaluated on their merits.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 and 11-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maor (US Patent # 5,811,813) in view of Lange (US Patent # 6,180,943).

With regards to claim 1, Maor teaches a gamma camera system comprising a pair of gamma camera heads **12, 13** (Figure 1) connected to form a right angle with respect to each other (Figures 1 and 5; column 2, lines 23-26) and a rotation mechanism that enables rotation about the patient in the direction indicated by **24**

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(Figure 1), which is parallel to the connection **29** (Figure 3; column 4, lines 16-18; column 4, lines 50-55) between the two gamma camera heads.

Maor does not specifically mention that the gamma camera heads are mounted on an arm. Maor does imply that the gamma camera heads are mounted on an arm of a gantry system, but fail to discuss the specifics of such mounting (column 5, lines 60-65).

Lange teaches that it is common to mount the gamma camera detectors on a telescopic arm for moving the detectors as close as possible to the patient (column 2, lines 5-10). Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to attach the pair of gamma camera heads to a telescopic arm so as to provide the ability to get as close as possible to the patient being imaged for improved resolution, as taught by Lange (column 1, lines 62-65).

With regards to claims 2 and 24, Maor discloses that the gamma camera system is capable of linear motion to or away from the patient as indicated by arrow **26** (Figure 1; column 3, lines 55-57), which is perpendicular to the line parallel to the connection.

With regards to claims 3 and 25, Maor does not discuss if linear motion is achieved by motion of the base on which the gamma camera system is mounted. However, as disclosed by Lange, motion to move the detectors to/from the patient is provided by the telescopic arms (column 2, lines 5-8).

With regards to claims 4 and 26, Maor also allows for further linear motion in the directions indicated by arrows **30** and **31** (column 3, lines 60-62), which in cooperation

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with motion along arrow **26** would encompass all directions perpendicular to the line parallel to the connection.

With regards to claim 5, Maor only discusses rotation of the gamma camera head about the patient and not that the rotation can be performed via a combination of linear motion and rotation. However, it is well known that a circle may be approximated by a combination of straight-line motion and rotation (i.e. straight line motion tangent to the circle followed by rotational motion back towards the circle to account for the deviation from a perfect circle introduced by the tangential motion). Maor (column 6, lines 4-7) allows for elliptical motion or body contour motion, which is provided by a combination of rotational and linear motion.

With regards to claims 6, 7, 17, and 18, Maor discloses that a rotation of 90° is sufficient to give a 180° SPECT data acquisition scan for cardiac studies (column 2, lines 26-29), thus acquiring data from 180° about the scanned object. Similarly, Maor discloses that a rotation of 360° is sufficient to give a 360° scan in half the time of a normal 360° scan (column 5, lines 7-14), thus acquiring data from all directions of a scanned object.

With regards to claim 8, Maor discloses that the camera head can be rotated around axis **27** (Figure 1; column 3, lines 57-59), which is perpendicular to the line.

With regards to claim 9, as discussed above, Lange teaches the use of telescopic arms in gamma cameras for moving the detectors as close as possible to the patient for improved resolution. Both Maor and Lange are silent with regards to the optimal range for the number of telescopic extensions. It would have been obvious to

one of ordinary skill in the art at the time the invention was made to provide between 2 and 6 extensions, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. It is further noted that the determination of the number of extensions is a product of desired rigidity for the system and desired extension length of the arm. It would have been obvious to one of ordinary skill in the art to select the appropriate number of extensions based on the system requirements and desired performance.

With regards to claim 11-13, Maor allows for the gamma camera system to follow a body contour or elliptical path (column 6, lines 4-7). It would have been further obvious to one having ordinary skill in the art at the time the invention was made to be able to follow a path chosen during motion so as to allow the operator to account for variations from normal path geometry, i.e. different patient shapes and/or different patient support devices.

With regards to claims 14-16, Maor allows for the gamma camera system to be used to scan a prone patient (Figure 1; column 3, lines 50-53). Maor further discusses the use of the gamma camera system in cardiac studies wherein the patient is seated or exercising (column 4, lines 35-40).

With regards to claim 19, Maor allows for the gamma camera system to perform a full body scan of a patient (column 5, lines 15-16), which requires the detector to scan the entire length of the patient, either by movement of the detector or by movement of the patient bed. Movement of the bed would require a specialized bed with additional

motors to provide the linear motion necessary. As the system suggested by Maor and Lange already provides linear motion in various directions, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to scan the patient using motion provided by the gamma camera system while not moving the patient, so as to avoid the cost and complexity of additional motorized system for a moveable bed. Further, by avoiding moving the patient, any bed or structure can be used to hold the patient during imaging.

With regards to claims 20-22, Maor discloses a controller **15** for reconstructing images of the patient **22**, but Maor is silent with regards to the dimension of each of the gamma camera heads compared to the size of the reconstruction circle. Typically, the gamma camera heads are at least as large, if not larger, than the diameter of the reconstruction circle to allow for the detector head to image the entire reconstruction circle at a given angle at one time. Figures 1 and 7 in Maor suggest such a case. However, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to have the dimension of the gamma camera less than 1.5 times the radius of the reconstruction circle but greater than the radius of the circle, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With regards to claims 23 and 28, Maor discloses that the gamma camera heads can be rigidly connected via a motorized threaded member **29** (Figure 3; column 4, lines

50-55) or may be permanently oriented at a 90° angle in the confines of a housing **31** (Figure 5).

With regards to claim 27, Maor discloses a controller **15** for reconstructing images of the patient **22**, but Maor is silent with regards to the amount of linear motion. However, with the detector heads mounted on a movable arm, the heads must be able to travel at least a sufficient distance to position the detector head across the reconstruction diameter. Thus, it would have been obvious for person having ordinary skill in the art at the time the invention was made to provide an amount of linear motion at least as large as the diameter of a reconstruction circle so as to allow sufficient motion for positioning the gamma camera head across the reconstruction volume.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maor and Lange, as applied to claim 1 above, and further in view of Warne et al. (US Patent # 5,762,608).

The combination of Maor and Lange discloses all the limitations of parent claim 1, as discussed above. However, Maor and Lange are silent with regards to the gamma camera system including sensors for sensing obstacles in the camera path to prevent collision of the camera with an object.

Warne et al. teaches a scanning imaging system with a rotating C-arm for use in X-ray imaging or emission studies (abstract; column 2, lines 17-19; Figure 7) wherein the detector is rotated about a patient (column 2, lines 25-29). Warne et al. further teach the inclusion of sensors in the scanning system to detect any obstructions during

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detector scanning or rotation. By sensing obstructions, damage to the system or injury to the patient can be prevented by taking corrective measures upon detection of an obstacle in the system path (column 2, lines 48-55).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to provide sensors for obstacle detection in the gamma camera system so as to prevent patient injury and/or damage to the gamma camera system, as taught by Warne et al.

7. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lange (US Patent # 6,6180,943).

Lange discloses a pair of gamma camera heads **1, 2** (Figure 1) connected to form a right angle and capable of viewing a reconstruction volume from a patient lying on bed **6** from a plurality of directions via rotation provided by support **3** (column 3, lines 36-45). A controller, which is provided by arithmetic and logic unit **90**, for measuring the incident radiation via counter unit **89** and processing into three-dimensional projection images stored in memory **92**. Lange is silent with regards to the dimension of the gamma camera heads with respect to the reconstruction volume. Typically the dimension of the gamma camera head is chosen to be at least as large as that of the reconstruction volume so as to be able to image the entire area. However, it would have been an obvious matter of design choice to have the dimension of the gamma camera head in the plane containing the angle smaller than the largest dimension of the reconstruction volume since such a modification would have involved a mere change in

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size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In *re Rose*, 105 USPQ 237 (CCPA 1955). One of ordinary skill in the art would have been further motivated to make the gamma camera dimensions smaller so as to reduce the overall size and thus decrease the footprint of the gamma camera system for use in cramped or tight examination centers.

With regards to claim 31, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the gamma camera head with a dimension between 50% and 75% of the largest dimension of the reconstruction volume, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In *re Aller*, 105 USPQ 233.

With regards to claim 32, Lange discloses that the gamma camera heads are rigidly connected at the right angle (column 2, lines 38-44).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ashburn (US Patent # 6,055,450) discloses a gamma camera system with two heads attached at an angle with a rotating hinge.

Eisen et al. (US Patent # 5,587,585) disclose a gamma camera system comprising a single gamma camera head mounted on a multi-position arm.

Crain et al. (US Patent # 6,582,121) discuss the use of robotic arms for positioning detectors in X-ray transmission systems.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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